

each globifer there is a calcareous rod which serves to support the head.

Globiferi are distributed over the whole surface of the skin. They occur on both the ventral and the dorsal surface. In size they measure a few millimetres. They occur in most Echinida. As yet I have examined them most accurately, besides *Sphærechinus*, in *Centrostephanus longispinus*, Peters. In this latter species the structures seated upon the peduncle are of ovate form.

The investigation of fresh globiferi, separated from the living animal, shows at once that they are glandular organs which emit a secretion through apertures. The tightly stuffed glands (each globule contains a gland with its aperture) may be easily brought to immediate evacuation; this takes place particularly on the addition of Flemming's chrom-osmium-acetic acid. The evacuation is effected by means of a well-developed musculature. The muscular fibrillæ (smooth muscle-cells) run concentrically with the aperture of each glandular ball.

The structure of these glandular balls is complex, and varies in the different genera and species. According to the state in which the gland is its structure differs. It reminds one strikingly (especially in *Centrostephanus*) of the conditions presented by the mucigenous cells of the Vertebrata in the resting state, or in active secretion.

Neither the Holothurians nor the Asterida possess any organs like the globiferi. In them the gland-cells are distributed in the skin, the epithelium. If this were the case in the Echinida, any action of theirs against enemies would be inconceivable, as the long spines must hinder any such action. Glandular organs will be capable of cooperating with the stalked pedicellariæ in defence only when attached to peduncles. And that we must regard the globiferi as defensive organs, weapons, and as acting in the same way as the nettle-capsules of the Cœlenterata, is indicated by their structure and by observations on the living animal.—*Sitzungsberichte der Jenaischen Gesellschaft für Medicin und Naturwissenschaft*, 1886.

Some new Infusoria from American Fresh Waters.

By Dr. ALFRED C. STOKES.

In the paper on this subject by Dr. Stokes in the 'Annals' for February of the present year, at p. 104, a new genus is characterized under the name of *Diplomastax*. In Dr. Stokes's MS. the name given to this genus was *Diplomestoma*, the etymology of which was given by him as follows:—"διπλός, double; ἰμῆν, a membrane; στόμα, a mouth;" from which it seemed to the Editors absolutely impossible to get such a word as *Diplomestoma*. While hesitating whether to change the name, and if so how to change it, the Editors found that in the explanation of the figures the species described stood as *Diplomastax frontata*; and the latter name was accordingly adopted, under the impression that Dr. Stokes had

either intended to substitute it for the other, or that he had been balancing between the two and had unfortunately chosen to adopt the bad one.

Dr. Stokes now writes to say that the name *Diplomastax* (which was no doubt at first adopted by him for his genus) is preoccupied among the Flagellate Infusoria, and to request that his name *Diplomestoma* may be substituted for it as that of the genus in question.

Striated Muscles in Echinida. By Dr. OTTO HAMANN.

While transversely striated muscles are known in many groups of the lower animals, hitherto only smooth muscular fibrillæ have been known in the Echinodermata. In Holothuriæ and Asterida I have sought in vain for transversely striated fibres*, but I have now succeeded in finding them in the Echinida. They occur, however, only in a few places, and, indeed, in places where a sudden, rapid, and energetic contraction has to take place. The largest forms of pedicellariæ, the *pedicell. tridentes* s. *tridactyles*, are best fitted for examination.

The musculature which moves the three arms consists of parallel fibrillæ, which, if examined in the living state, distinctly show the transverse striation. The individual fibrillæ may be easily separated from each other, and then it appears that each fibril has attached to it externally a large, elongate oval nucleus, which is situated about in the middle of the fibril. It is but rarely that any plasma is still demonstrable around this. If it be pulled to pieces in picro-carminé and afterwards examined in glycerine, the lighter and darker transverse striæ, and, in the former, Krause's transverse disks, make their appearance distinctly, as also the thin sarcolemma. The diameter of the nearly cylindrical fibrillæ is about 0·0028 millim.; their length in the pedicellariæ of *Centrostephanus longispinus*, Peters, is between 0·5 and 0·6 millim.

Now and then we may detect a longitudinal striation in the fibrillæ; and when treated with various liquids, each fibril breaks up into a number of exceedingly fine parallel elements (I counted 4-6) which still show the transverse striation distinctly.

The species which I have been able to examine, in which transversely striated musculature exists, are as follows:—*Centrostephanus longispinus*, Peters; *Dorocidaris papillata*, A. Agass.; *Arbacia pustulosa*, Gray; *Strongylocentrotus lividus*, Brandt; *Sphærechinus granularis*, A. Agass.; *Echinus acutus*, Lam.; *Echinus melo*, Lam.; and *Echinus microtuberculatus*, Blainv.—*Sitzungsberichte der Jenaischen Gesellschaft für Medicin und Naturwissenschaft*, 1886.

* Hamann, 'Beiträge zur Histologie der Echinodermen: Heft 1. Die Holothurien; Heft 2. Die Asteriden anatomisch und histologisch untersucht' (Jena, 1884-85).